

Editorial

Depression and outcome

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There are ongoing demographic shifts in most of the developed world, resulting in an aging population. Musculoskeletal degenerative conditions, including diseases of the spine, are more common among the elderly, and improved surgical techniques, perioperative management, and reduction of risk related to comorbid conditions have broadened surgical indications for treatment of these conditions. Surgeons are increasingly evaluating older patients for surgical interventions that would not have been considered a decade ago. Until recently, most studies evaluating the clinical and radiographic outcomes of surgical management of spinal degenerative conditions included patients with a broad spectrum of ages. Few studies focused exclusively on management and outcomes restricted to the elderly and very elderly. The limited number of studies directly comparing outcomes across age ranges has demonstrated differences in clinical presentation, indications for surgery, surgical technique, complications, and outcomes.^{5,7,9,10} The paper by Adogwa et al. in this issue (“Affective disorders influence clinical outcomes after revision lumbar surgery in elderly patients with symptomatic adjacent-segment disease, recurrent stenosis, or pseudarthrosis”) is a study that provides some interesting perspectives on the surgical management of more complex disorders of the lumbar spine in older patients.³

This study evaluated factors affecting clinical outcomes in 69 patients undergoing revision neural decompression and instrumented fusion for adjacent-segment disease (ASD), pseudarthrosis, or same-level recurrent stenosis.³ An important aspect of this study was the inclusion of the Zung self-rating depression scale (ZDS) to assess the impact of preoperative psychological status on clinical outcomes, in addition to the usual standardized pain and functional outcome measures. Both depressive symptoms and major depressive disorders are relatively common in the elderly.⁴ A recent meta-analysis of older adults (aged 50

years and older) found a rate of 3.29% for current major depressive disorder and 16.52% for lifetime major depressive disorder, and if patients with depressive symptoms are included, the prevalence rate was 19.47%.¹¹ Prior studies have demonstrated poorer outcomes in patients with depression who undergo lumbar spine surgery.^{2,8} The lead author of one of these previous studies² reported the results of 53 adult patients undergoing revision neural decompression and instrumented fusion for same-level recurrent stenosis and found that increasing preoperative ZDS score was significantly associated with patient dissatisfaction 2 years after revision lumbar surgery.

Much of the information contained in the present article has been published in a previous article¹ (“Revision lumbar surgery in elderly patients with symptomatic pseudarthrosis, adjacent-segment disease, or same-level recurrent stenosis. Part 1. Two-year outcomes and clinical efficacy. Clinical article”). In this previous article, the authors concluded that revision lumbar decompression and extension of fusion for symptomatic pseudarthrosis, ASD, or same-level recurrent stenosis provides improvement in low-back pain, disability, and quality of life, and should be considered a viable treatment option for elderly patients with persistent or recurrent back and radicular pain. They further concluded that mental health symptoms may make a patient more refractory to revision surgery, noting that the ZDS score and 12-Item Short-Form Health Survey (SF-12) mental component score did not change appreciably after revision surgery.¹ A slightly more detailed analysis of the effect of depressive symptoms is provided in the present article.³ The major new information provided in this article is that patients in the top quartile (most depressed) versus bottom quartile (least depressed)—based on preoperative ZDS scores—experienced a 1.6-fold reduced mean improvement in Oswestry Disability Index (ODI) 2 years after surgery ($p = 0.001$).

Although the information on the relationship between depressive symptoms and outcomes is helpful, it is unfortunate that an even more detailed analysis was not performed. For example, the figure in the manuscript appears to show that the “Most Depressed Preop (ZDS)” patients had substantially lower baseline ODI scores compared with the “Least Depressed Preop (ZDS)” patients.³ Both the most-depressed and least-depressed patients had similar final ODI outcomes, but the magnitude of improvement in the least-depressed patients was greater due to the

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higher baseline ODI scores. A more detailed analysis may have demonstrated that surgery in depressed patients was performed more for somatic complaints rather than for demonstrable functional limitations. A recently published study has demonstrated that patients with worse preoperative disability achieved greater postoperative improvement in disability (assessed by ODI scores).⁶ It would have been valuable if information were provided to determine if there were similar differences in baseline scores between the least-depressed and most-depressed patients on the SF-12 physical component score to confirm less functional limitation in the most-depressed patients.

The present article calls attention to potential differences in surgical outcome in older patients with increasingly severe symptoms of depression. A larger, more detailed prospective study evaluating the effect of depression and other coexisting medical comorbidities on the outcomes of lumbar spine surgery in the elderly is needed. This article provides sufficient evidence to recommend screening elderly patients for depression and to confirm that the spinal disorder is causing sufficient functional limitation rather than just somatic complaints before proceeding to surgical intervention.

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Disclosure

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Response

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The ongoing demographic shifts occurring in most developed and developing countries around the world make the topic of our paper especially timely. As the number of elderly patients in the US and elsewhere continues to increase, there will be an associated increase in age-related diseases, such as degenerative conditions of the spine. In fact, nearly 20% of all physician office visits for low-back pain involve individuals over the age of 65, of whom approximately 4% will require surgical intervention. Elderly patients are demanding medical care, including surgery, not only to save life but also to increase the quality of it.

Historically, patient age has been a relative contraindication to surgery due to poor functional reserve and comorbid conditions that contribute to an unimpressive postoperative complications profile. Surgery on an aging spine is often technically challenging for the surgeon and can be associated with a high incidence of failure, which can be especially perplexing to the patient. Over the past decade, there has been a paradigm shift in the management of spinal pathology in elderly patients. The use of minimally invasive operative corridors, coupled with the formation of unique multidisciplinary teams aimed at optimizing outcomes in this subgroup of patients, has led to an accelerated return to daily activities, shorter time to narcotic independence, and overall improvement in health status and patient satisfaction. However, these reported benefits are not universal, as a subset of elderly patients endorses little or no functional benefit after index or revision surgery. A growing body of evidence suggests that preoperative psychological predisposition may adversely affect postoperative outcomes after spine surgery, contributing to the observed variability in outcomes. In our study, we demonstrated that the extent of preoperative depression was an independent predictor of postoperative functional outcomes, and as such, the early recognition and treatment of depression in elderly patients may contribute to an improved perception of overall health status and help identify at-risk patients. The more vexing ques-

tion is what we do with this information. Should we pre-treat patients with depression or depressive symptoms prior to spine surgery, and if yes, for how long?

Decreased physical activity leading to physical deconditioning and avoidance of pain-provoking movements has the potential to affect the degree of postoperative functional improvement. A recently published study has demonstrated that patients with worse preoperative disability achieved greater postoperative improvement in disability (assessed by ODI scores). In the current study, there was no baseline difference in the degree of functional disability (assessed by baseline ODI scores) between the top quartile (most depressed) versus the bottom quartile (least depressed). Moreover, the baseline functional status in the most-depressed patients undergoing revision surgery for same-level recurrent stenosis

or pseudarthrosis was slightly superior to, although not significantly different from, that of the bottom quartile (least depressed). Similarly, there was no statistically significant difference in baseline SF-12 physical component scores between the top quartile (most depressed) and bottom quartile (least depressed; $p = 0.26$), suggesting that patients in the top quartile (most depressed) were no more functionally disabled. Irrespective of baseline functional status, the least-depressed patients expressed a greater magnitude of improvement when compared to the most-depressed patients. Future multiinstitutional prospective studies are needed to corroborate our findings.

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